

## WEST Search History

DATE: Monday, October 25, 2004

Hide?	Set Name	Query	Hit Count
		<i>DB=PGPB; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L2	(mortierella alpina or M. alpina) and (desaturase or oxidase or oxidoreductase)	26
		<i>DB=USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L1	(mortierella alpina or M. alpina) and (desaturase or oxidase or oxidoreductase)	40

END OF SEARCH HISTORY

## Hit List

Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs
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Search Results - Record(s) 1 through 20 of 40 returned.

☐ 1. Document ID: US 6677145 B2

Using default format because multiple data bases are involved.

L1: Entry 1 of 40

File: USPT

Jan 13, 2004

US-PAT-NO: 6677145

DOCUMENT-IDENTIFIER: US 6677145 B2

TITLE: Elongase genes and uses thereof

DATE-ISSUED: January 13, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Leonard; Amanda Eun-Yeong	Gahanna	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Pereira; Suzette L.	Westerville	OH		

US-CL-CURRENT: 435/193; 435/252.31, 435/252.33, 435/254.11, 435/254.21, 435/254.22,  
435/254.23, 435/254.3, 435/254.4, 435/254.5, 435/254.6, 435/320.1, 435/328,  
435/348, 435/419, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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☐ 2. Document ID: US 6638561 B1

L1: Entry 2 of 40

File: USPT

Oct 28, 2003

US-PAT-NO: 6638561

DOCUMENT-IDENTIFIER: US 6638561 B1

TITLE: Microbial arachidonic acid (ARA) for use in marine feed

DATE-ISSUED: October 28, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Beudeker; Robert Franciscus	Den Hoorn			NL
Coutteau; Peter	Baasrode			BE

US-CL-CURRENT: 426/643; 426/805

## ABSTRACT:

A marine feed composition is described comprising microbially derived arachidonic acid (ARA) or ARA in the form of a triglyceride. The ARA is suitably produced by a fungus, such as of the genus *Mortierella*, although the feed composition itself is free of microbial cells. These forms of ARA have been found to give better growth and pigmentation promotion in marine organisms (shrimps and fish) than corresponding phospholipid forms of ARA from fish oil. The ARA can be in the form of an oil, e.g. an oil-in-water emulsion or may first be fed to larvae, rotifers or nauplii which are themselves included in a composition as "live" feed for larger organisms.

46 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KOMC	Drawings
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☐ 3. Document ID: US 6635451 B2

L1: Entry 3 of 40

File: USPT

Oct 21, 2003

US-PAT-NO: 6635451

DOCUMENT-IDENTIFIER: US 6635451 B2

TITLE: Desaturase genes and uses thereof

DATE-ISSUED: October 21, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Huang; Yung-Sheng	Columbus	OH		
Das; Tapas	Worthington	OH		
Thurmond; Jennifer	Columbus	OH		
Pereira; Suzette L.	Westerville	OH		

US-CL-CURRENT: 435/71.1; 424/93.21, 424/93.7, 435/189, 435/320.1, 536/23.1,  
536/23.2

## ABSTRACT:

The subject invention relates to the identification of genes involved in the desaturation of polyunsaturated fatty acids at carbon 5 (i.e., ".DELTA.5-desaturase") and at carbon 6 (i.e., ".DELTA.6-desaturase") and to uses thereof. In particular, .DELTA.5-desaturase may be utilized, for example, in the conversion of dihomo-.gamma.-linolenic acid (DGLA) to arachidonic acid (AA) and in the conversion of 20:4n-3 to eicosapentaenoic acid (EPA). Delta-6 desaturase may be used, for example, in the conversion of linoleic (LA) to .gamma.-linolenic acid (GLA). AA or polyunsaturated fatty acids produced therefrom may be added to pharmaceutical compositions, nutritional compositions, animal feeds, as well as other products such as cosmetics.

22 Claims, 7 Drawing figures

Exemplary Claim Number: 16  
Number of Drawing Sheets: 7

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 4. Document ID: US 6602690 B2

L1: Entry 4 of 40

File: USPT

Aug 5, 2003

US-PAT-NO: 6602690  
DOCUMENT-IDENTIFIER: US 6602690 B2

TITLE: Process for production of dihomogamma-linolenic acid and lipid containing same

DATE-ISSUED: August 5, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kawashima; Hiroshi	Ibaraki			JP
Akimoto; Kengo	Ibaraki			JP
Yamada; Hideaki	Kyoto			JP
Shimizu; Sakayu	Kyoto			JP

US-CL-CURRENT: 435/134; 435/135, 435/136, 514/549, 514/551, 514/560

ABSTRACT:

A process for the production of dihomogamma-linolenic acid comprising the steps of culturing a microorganism having an ability to produce arachidonic acid and having a reduced or lost DELTA.5 desaturase activity to produce dihomogamma-linolenic acid or a lipid containing dihomogamma-linolenic acid, and recovering the dihomogamma-linolenic acid.

4 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 5. Document ID: US 6589767 B1

L1: Entry 5 of 40

File: USPT

Jul 8, 2003

US-PAT-NO: 6589767  
DOCUMENT-IDENTIFIER: US 6589767 B1

TITLE: Methods and compositions for synthesis of long chain polyunsaturated fatty acids

DATE-ISSUED: July 8, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knutzon; Deborah	Granite Bay	CA		
Mukerji; Pradip	Gahanna	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Thurmond; Jennifer	Columbus	OH		
Chaudhary; Sunita	Westerville	OH		

US-CL-CURRENT: 435/189

## ABSTRACT:

The present invention relates to a fatty acid .DELTA.5-desaturase able to catalyze the conversion of dihomogamma-linolenic acid to arachidonic acid. Nucleic acid sequences encoding a .DELTA.5-desaturase, nucleic acid sequences which hybridize thereto, DNA constructs comprising a .DELTA.5-desaturase gene, and recombinant host microorganism or animal expressing increased levels of a .DELTA.5-desaturase are described. Methods for desaturating a fatty acid at the .DELTA.5 position and for producing arachidonic acid by expressing increased levels of a .DELTA.5 desaturase are disclosed. Fatty acids, and oils containing them, which have been desaturated by a .DELTA.5-desaturase produced by recombinant host microorganisms or animals are provided. Pharmaceutical compositions, infant formulas or dietary supplements containing fatty acids which have been desaturated by a .DELTA.5-desaturase produced by a recombinant host microorganism or animal also are described.

22 Claims, 23 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 17

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachment	Claims	KMC	Draw. D
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☐ 6. Document ID: US 6503734 B1

L1: Entry 6 of 40

File: USPT

Jan 7, 2003

US-PAT-NO: 6503734

DOCUMENT-IDENTIFIER: US 6503734 B1

TITLE: Cytochrome b5 gene and protein of Candida tropicalis and methods relating thereto

DATE-ISSUED: January 7, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Craft; David L.	Fort Thomas	KY		
Madduri; Krishna M.	Westfield	IN		
Loper; John C.	Cincinnati	OH		

US-CL-CURRENT: 435/69.1; 435/254.11, 435/255.4, 435/320.1, 536/23.2

## ABSTRACT:

A novel gene has been isolated which encodes cytochrome b5 (CYTb5) protein of the .omega.-hydroxylase complex of *C. tropicalis* 20336. Vectors including this gene, and transformed host cells are provided. Methods of increasing the production of a CYTb5 protein are also provided which involve transforming a host cell with a gene encoding this protein and culturing the cells. Methods of increasing the production of a dicarboxylic acid are also provided which involve increasing in the host cell the number of genes encoding this protein.

22 Claims, 57 Drawing figures

Exemplary Claim Number: 21

Number of Drawing Sheets: 56

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachment	Claims	KWIC	Draw. De
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☐ 7. Document ID: US 6459018 B1

L1: Entry 7 of 40

File: USPT

Oct 1, 2002

US-PAT-NO: 6459018

DOCUMENT-IDENTIFIER: US 6459018 B1

TITLE: Polyunsaturated fatty acids in plants

DATE-ISSUED: October 1, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knutzon; Debbie	Granite Bay	CA		

US-CL-CURRENT: 800/281; 435/419, 435/468, 435/69.1, 800/298

ABSTRACT:

The present invention relates to compositions and methods for preparing polyunsaturated long chain fatty acids in plants, plant parts and plant cells, such as leaves, roots, fruits and seeds. Nucleic acid sequences and constructs encoding fatty acid desaturases, including .DELTA.5-desaturases, .DELTA.6-desaturases and .DELTA.12-desaturases, are used to generate transgenic plants, plant parts and cells which contain and express one or more transgenes encoding one or more desaturases. Expression of the desaturases with different substrate specificities in the plant system permit the large scale production of polyunsaturated long chain fatty acids such as docosahexaenoic acid, eicosapentaenoic acid, .alpha.-linolenic acid, gamma-linolenic acid, arachidonic acid and the like for modification of the fatty acid profile of plants, plant parts and tissues. Manipulation of the fatty acid profiles allows for the production of commercial quantities of novel plant oils and products.

12 Claims, 2 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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☐ 8. Document ID: US 6448055 B1

L1: Entry 8 of 40

File: USPT

Sep 10, 2002

US-PAT-NO: 6448055

DOCUMENT-IDENTIFIER: US 6448055 B1

TITLE: .DELTA.9-desaturase gene

DATE-ISSUED: September 10, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Shimizu; Sakayu	Kyoto			JP
Kobayashi; Michihiko	Kyoto			JP

US-CL-CURRENT: 435/189; 435/134, 435/252.3, 435/254.3, 435/71.1, 536/23.2

## ABSTRACT:

Genomic DNA and cDNA encoding .DELTA.9-desaturase from a microorganism belonging to the subgenus Mortierella of the genus Mortierella, an expression vector for expression thereof, and a transformant are disclosed. A method for producing .DELTA.9-desaturase by use of a gene encoding the enzyme is also disclosed. Introduction of the .DELTA.9-desaturase gene of the present invention into an unsaturated fatty acid producing cell can enhance conversion into palmitoleic acid or oleic acid, starting materials for unsaturated fatty acids, and can increase the production of unsaturated fatty acids. By combining a gene for cytochrome b5 or a gene for cytochrome b5 reductase, constituents of the microsomal electron transport system, with the .DELTA.9-desaturase of the present invention, more efficient production can be expected. .DELTA.9-desaturase can also be produced with high efficiency by a recombinant DNA technology.

8 Claims, 26 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 26

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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☐ 9. Document ID: US 6444876 B1

L1: Entry 9 of 40

File: USPT

Sep 3, 2002

US-PAT-NO: 6444876

DOCUMENT-IDENTIFIER: US 6444876 B1

TITLE: Acyl CoA: cholesterol acyltransferase related nucleic acid sequences

DATE-ISSUED: September 3, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lassner; Michael W.	Redwood City	CA		
Ruezinsky; Diane M.	Woodland	CA		

US-CL-CURRENT: 800/281; 435/252.3, 435/419, 435/468, 435/471, 536/23.2, 536/23.6,  
800/298

## ABSTRACT:

By this invention, novel nucleic acid sequences encoding for acyl-CoA: cholesterol acyltransferase (ACAT) related proteins are provided, wherein ACAT-like protein is active in the formation of a sterol ester and/or triacylglycerol from a fatty acyl-CoA and sterol and/or diacylglycerol substrates. Also considered are amino acid and nucleic acid sequences obtainable from ACAT-like nucleic acid sequences and the use of such sequences to provide transgenic host cells capable of producing sterol esters and/or triacylglycerols.

32 Claims, 17 Drawing figures

Exemplary Claim Number: 10

Number of Drawing Sheets: 17

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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☐ 10. Document ID: US 6432684 B1

L1: Entry 10 of 40

File: USPT

Aug 13, 2002

US-PAT-NO: 6432684

DOCUMENT-IDENTIFIER: US 6432684 B1

TITLE: Human desaturase gene and uses thereof

DATE-ISSUED: August 13, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Leonard; Amanda Eun-Yeong	Gahanna	OH		
Huang; Yung-Sheng	Columbus	OH		
Das; Tapas	Worthington	OH		

US-CL-CURRENT: 435/136; 435/189, 435/252.3, 435/320.1, 530/350, 536/23.2

## ABSTRACT:

The subject invention relates to the identification of a gene involved in the desaturation of polyunsaturated fatty acids at carbon 5 (i.e., "human .DELTA.5-desaturase") and to uses thereof. In particular, human .DELTA.5-desaturase may be utilized, for example, in the conversion of dihomo-.gamma.-linolenic acid (DGLA) to arachidonic acid (AA) and in the conversion of 20:4n-3 to eicosapentaenoic acid (EPA). AA or polyunsaturated fatty acids produced therefrom may be added to



pharmaceutical compositions, nutritional compositions, animal feeds, as well as other products such as cosmetics.

17 Claims, 43 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 39

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 11. Document ID: US 6428990 B1

L1: Entry 11 of 40

File: USPT

Aug 6, 2002

US-PAT-NO: 6428990  
DOCUMENT-IDENTIFIER: US 6428990 B1

TITLE: Human desaturase gene and uses thereof

DATE-ISSUED: August 6, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Leonard; Amanda Eun-Yeong	Gahanna	OH		
Huang; Yung-Sheng	Columbus	OH		
Parker-Barnes; Jennifer M.	New Albany	OH		

US-CL-CURRENT: 435/134; 435/135, 435/136, 435/189, 435/252.3, 435/320.1, 530/350, 536/23.2

ABSTRACT:

The subject invention relates to the identification of a gene involved in the desaturation of polyunsaturated fatty acids at carbon 5 (i.e., "human .DELTA.5-desaturase") and to uses thereof. In particular, human .DELTA.5-desaturase may be utilized, for example, in the conversion of dihomo-.gamma.-linolenic acid (DGLA) to arachidonic acid (AA) and in the conversion of 20:4n-3 to eicosapentaenoic acid (EPA). AA or polyunsaturated fatty acids produced therefrom may be added to pharmaceutical compositions, nutritional compositions, animal feeds, as well as other products such as cosmetics.

6 Claims, 48 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 48

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 12. Document ID: US 6410288 B1

L1: Entry 12 of 40

File: USPT

Jun 25, 2002

US-PAT-NO: 6410288  
DOCUMENT-IDENTIFIER: US 6410288 B1

TITLE: Methods and compositions for synthesis of long chain poly-unsaturated fatty acids

DATE-ISSUED: June 25, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knutzon; Deborah	Granite Bay	CA		
Mukerji; Pradip	Gahanna	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Thurmond; Jennifer	Columbus	OH		
Chaudhary; Sunita	Westerville	OH		

US-CL-CURRENT: 435/189; 536/23.2

ABSTRACT:

The present invention relates to fatty acid desaturases able to catalyze the conversion of oleic acid to linoleic acid, linoleic acid to gamma-linolenic acid, or of alpha-linolenic acid to stearidonic acid. Nucleic acid sequences encoding desaturases, nucleic acid sequences which hybridize thereto, DNA constructs comprising a desaturase gene, and recombinant host microorganism or animal expressing increased levels of a desaturase are described. Methods for desaturating a fatty acid and for producing a desaturated fatty acid by expressing increased levels of a desaturase are disclosed. Fatty acids, and oils containing them, which have been desaturated by a desaturase produced by recombinant host microorganisms or animals are provided. Pharmaceutical compositions, infant formulas or dietary supplements containing fatty acids which have been desaturated by a desaturase produced by a recombinant host microorganism or animal also are described.

20 Claims, 19 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 16

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 13. Document ID: US 6403349 B1

L1: Entry 13 of 40

File: USPT

Jun 11, 2002

US-PAT-NO: 6403349  
DOCUMENT-IDENTIFIER: US 6403349 B1

TITLE: Elongase gene and uses thereof

DATE-ISSUED: June 11, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Mukerji; Pradip	Gahanna	OH
Leonard; Amanda Eun-Yeong	Gahanna	OH
Huang; Yung-Sheng	Upper Arlington	OH
Thurmond; Jennifer	Columbus	OH
Kirchner; Stephen J.	Westerville	OH

US-CL-CURRENT: [435/183](#); [435/252.3](#), [435/254.1](#), [435/320.1](#), [435/325](#), [536/23.1](#),  
[536/23.2](#)

## ABSTRACT:

The subject invention relates to the identification of a gene involved in the elongation of polyunsaturated fatty acids (i.e., "elongase") and to uses thereof. In particular, elongase is utilized in the conversion of gamma linolenic acid (GLA) to dihomogamma linolenic acid (DGLA) and in the conversion of 20:4n-3 to eicosapentaenoic acid (EPA). DGLA may be utilized in the production of polyunsaturated fatty acids, such as arachidonic acid (AA) which may be added to pharmaceutical compositions, nutritional compositions, animal feeds, as well as other products such as cosmetics.

20 Claims, 27 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 26

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KIMC	Draw. D.
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☐ 14. Document ID: US 6287829 B1

L1: Entry 14 of 40

File: USPT

Sep 11, 2001

US-PAT-NO: 6287829

DOCUMENT-IDENTIFIER: US 6287829 B1

TITLE: Process for the selective enzymatic hydroxylation of aldehydes and ketones

DATE-ISSUED: September 11, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Stutz de Raadt; Anna	Graz			AT
Kopper; Irene	Innsbruck			AT
Griengl; Herfried	Graz			AT
Klingler; Markus	Markt Hartmannsdorf			AT
Braunegg; Gerhart	Graz			AT

US-CL-CURRENT: [435/155](#); [435/147](#), [435/148](#), [435/832](#), [568/343](#), [568/376](#), [568/379](#),  
[568/420](#), [568/626](#)

## ABSTRACT:

A process for the selective enzymatic hydroxylation of aldehydes and ketones using

chiral anchor-protective groups.

7 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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☐ 15. Document ID: US 6280982 B1

L1: Entry 15 of 40

File: USPT

Aug 28, 2001

US-PAT-NO: 6280982

DOCUMENT-IDENTIFIER: US 6280982 B1

TITLE: Process for production of dihomogamma-linolenic acid and lipid containing same

DATE-ISSUED: August 28, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kawashima; Hiroshi	Ibaraki			JP
Akimoto; Kengo	Ibaraki			JP
Yamada; Hideaki	Kyoto			JP
Shimizu; Sakayu	Kyoto			JP

US-CL-CURRENT: 435/134; 435/136, 435/187

ABSTRACT:

A process for the production of dihomogamma-linolenic acid comprising the steps of culturing a microorganism having an ability to produce araquidonic acid and having a reduced or lost DELTA.5 desaturase activity to produce dihomogamma-linolenic acid or a lipid containing dihomogamma-linolenic acid, and recovering the dihomogamma-linolenic acid.

28 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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☐ 16. Document ID: US 6150144 A

L1: Entry 16 of 40

File: USPT

Nov 21, 2000

US-PAT-NO: 6150144

DOCUMENT-IDENTIFIER: US 6150144 A

TITLE: Process for producing omega-9 highly unsaturated fatty acid and lipid containing the same

DATE-ISSUED: November 21, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Akimoto; Kengo	Osaka			JP
Kawashima; Hiroshi	Takatsuki			JP
Shimizu; Sakayu	Kyoto			JP

US-CL-CURRENT: 435/134

## ABSTRACT:

The present invention discloses a process for producing lipid containing omega-9 highly unsaturated fatty acid by culturing in a medium a mutant strain obtained by mutation on a microorganism having the ability to produce arachidonic acid belonging to the genus *Mortierella* and so forth, in which .DELTA.12 desaturation activity is decreased or lost, but at least one of .DELTA.5 desaturation activity, .DELTA.6 desaturation activity and chain length elongation activity is elevated. Moreover, the present invention also discloses a process for producing omega-9 highly unsaturated fatty acid by collecting omega-9 highly unsaturated fatty acid from the culture or lipid described above.

13 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Exemplary	Attachments	Claims	KOMC	Draw D
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☐ 17. Document ID: US 6136574 A

L1: Entry 17 of 40

File: USPT

Oct 24, 2000

US-PAT-NO: 6136574

DOCUMENT-IDENTIFIER: US 6136574 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Methods and compositions for synthesis of long chain polyunsaturated fatty acids

DATE-ISSUED: October 24, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knutzon; Deborah	Granite Bay	CA		
Mukerji; Pradip	Gahanna	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Thurmond; Jennifer	Columbus	OH		
Chaudhary; Sunita	Pearland	TX		

US-CL-CURRENT: 435/134; 435/136

## ABSTRACT:

The present invention relates to fatty acid desaturases able to catalyze the conversion of oleic acid to linoleic acid, linoleic acid to gamma-linolenic acid, or of alpha-linolenic acid to stearidonic acid. Nucleic acid sequences encoding desaturases, nucleic acid sequences which hybridize thereto, DNA constructs comprising a desaturase gene, and recombinant host microorganism or animal expressing increased levels of a desaturase are described. Methods for desaturating a fatty acid and for producing a desaturated fatty acid by expressing increased levels of a desaturase are disclosed. Fatty acids, and oils containing them, which have been desaturated by a desaturase produced by recombinant host microorganisms or animals are provided. Pharmaceutical compositions, infant formulas or dietary supplements containing fatty acids which have been desaturated by a desaturase produced by a recombinant host microorganism or animal also are described.

22 Claims, 18 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 16

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw De
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☐ 18. Document ID: US H001893 H

L1: Entry 18 of 40

File: USPT

Oct 3, 2000

US-PAT-NO: H001893

DOCUMENT-IDENTIFIER: US H001893 H

TITLE: Enzymatic reduction method for the preparation of halohydrins

DATE-ISSUED: October 3, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Patel; Ramesh N.	Bridgewater	NJ		
Szarka; Laszlo J.	East Brunswick	NJ		
Banerjee; Amit	Yardley	PA		
McNamee; Clyde G.	Lawrenceville	NJ		

US-CL-CURRENT: 435/129; 435/280, 435/822

ABSTRACT:

An enzymatic reduction method, particularly a stereoselective enzymatic reduction method, for the preparation of halohydrins from haloketones. The halohydrin products are particularly useful in the preparation of epoxides, which may be employed as intermediates in the preparation of protease inhibitors such as retroviral protease inhibitors.

1 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw De
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☐ 19. Document ID: US 6075183 A

L1: Entry 19 of 40

File: USPT

Jun 13, 2000

US-PAT-NO: 6075183

DOCUMENT-IDENTIFIER: US 6075183 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Methods and compositions for synthesis of long chain poly-unsaturated fatty acids in plants

DATE-ISSUED: June 13, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knutzon; Deborah	Granite Bay	CA		
Mukerji; Pradip	Gahanna	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Thurmond; Jennifer	Columbus	OH		
Chaudhary; Sunita	Pearland	TX		

US-CL-CURRENT: 800/281; 435/134, 435/252.3, 435/419, 435/430, 435/468, 435/471, 435/69.1, 536/23.2, 800/298

## ABSTRACT:

The present invention relates to compositions and methods for preparing poly-unsaturated long chain fatty acids in plants, plant parts and plant cells, such as leaves, roots, fruits and seeds. Nucleic acid sequences and constructs encoding fatty acid desaturases, including .DELTA.5-desaturases, .DELTA.6-desaturases and .DELTA.12-desaturases, are used to generate transgenic plants, plant parts and cells which contain and express one or more transgenes encoding one or more desaturases. Expression of the desaturases with different substrate specificities in the plant system permit the large scale production of poly-unsaturated long chain fatty acids such as docosahexaenoic acid, eicosapentaenoic acid, .alpha.-linoleic acid, gamma-linolenic acid, arachidonic acid and the like for modification of the fatty acid profile of plants, plant parts and tissues. Manipulation of the fatty acid profiles allows for the production of commercial quantities of novel plant oils and products.

22 Claims, 7 Drawing figures

Exemplary Claim Number: 19

Number of Drawing Sheets: 17

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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☐ 20. Document ID: US 6051754 A

L1: Entry 20 of 40

File: USPT

Apr 18, 2000

US-PAT-NO: 6051754

DOCUMENT-IDENTIFIER: US 6051754 A

TITLE: Methods and compositions for synthesis of long chain poly-unsaturated fatty acids in plants

DATE-ISSUED: April 18, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knutzon; Deborah	Granite Bay	CA		

US-CL-CURRENT: 800/281; 435/252.3, 435/419, 536/23.2

## ABSTRACT:

The present invention relates to compositions and methods for preparing poly-unsaturated long chain fatty acids in plants, plant parts and plant cells, such as leaves, roots, fruits and seeds. Nucleic acid sequences and constructs encoding fatty acid desaturases, including .DELTA.5-desaturases, .DELTA.6-desaturases and .DELTA.12-desaturases, are used to generate transgenic plants, plant parts and cells which contain and express one or more transgenes encoding one or more desaturases. Expression of the desaturases with different substrate specificities in the plant system permit the large scale production of poly-unsaturated long chain fatty acids such as docosahexaenoic acid, eicosapentaenoic acid, .alpha.-linoleic acid, gamma-linolenic acid, arachidonic acid and the like for modification of the fatty acid profile of plants, plant parts and tissues. Manipulation of the fatty acid profiles allows for the production of commercial quantities of novel plant oils and products.

14 Claims, 8 Drawing figures

Exemplary Claim Number: 7

Number of Drawing Sheets: 21

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw. D.
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Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
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Terms	Documents
(mortierella alpina or M. alpina) and (desaturase or oxidase or oxidoreductase)	40

Display Format:  [Previous Page](#)[Next Page](#)[Go to Doc#](#)



## Hit List

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**Search Results - Record(s) 21 through 40 of 40 returned.**

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☐ 21. Document ID: US 5981588 A**Using default format because multiple data bases are involved.**

L1: Entry 21 of 40

File: USPT

Nov 9, 1999

US-PAT-NO: 5981588

DOCUMENT-IDENTIFIER: US 5981588 A

TITLE: .omega.9-unsaturated fatty acid compositions for preventing or alleviating medical symptoms caused by delayed allergy reactions

DATE-ISSUED: November 9, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Akimoto; Kengo	Osaka			JP
Kawashima; Hiroshi	Takatsuki			JP
Hamazaki; Tomohito	Toyama			JP
Sawazaki; Shigeki	Toyama			JP

US-CL-CURRENT: 514/560; 435/134

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 22. Document ID: US 5972664 A

L1: Entry 22 of 40

File: USPT

Oct 26, 1999

US-PAT-NO: 5972664

DOCUMENT-IDENTIFIER: US 5972664 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Methods and compositions for synthesis of long chain poly-unsaturated fatty acids

DATE-ISSUED: October 26, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knutzon; Deborah	Granite Bay	CA		
Mukerji; Pradip	Grahanna	OH		
Huang; Yung-Sheng	Arlington	OH		

Thurmond; Jennifer                      Columbus                      OH  
Chaudhary; Sunita                      Westerville                      OH

US-CL-CURRENT: 435/136; 435/189, 435/252.3, 435/254.3, 435/320.1, 536/23.2

ABSTRACT:

The present invention relates to a fatty acid .DELTA.5-desaturase able to catalyze the conversion of dihomo-gamma-linolenic acid to arachidonic acid. Nucleic acid sequences encoding a .DELTA.5-desaturase, nucleic acid sequences which hybridize thereto, DNA constructs comprising a .DELTA.5-desaturase gene, and recombinant host microorganism or animal expressing increased levels of a .DELTA.5-desaturase are described. Methods for desaturating a fatty acid at the .DELTA.5 position and for producing arachidonic acid by expressing increased levels of a .DELTA.5 desaturase are disclosed. Fatty acids, and oils containing them, which have been desaturated by a .DELTA.5-desaturase produced by recombinant host microorganisms or animals are provided. Pharmaceutical compositions, infant formulas or dietary supplements containing fatty acids which have been desaturated by a .DELTA.5-desaturase produced by a recombinant host microorganism or animal also are described.

52 Claims, 21 Drawing figures  
Exemplary Claim Number: 34  
Number of Drawing Sheets: 17

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 23. Document ID: US 5968809 A

L1: Entry 23 of 40

File: USPT

Oct 19, 1999

US-PAT-NO: 5968809

DOCUMENT-IDENTIFIER: US 5968809 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Methods and compositions for synthesis of long chain poly-unsaturated fatty acids

DATE-ISSUED: October 19, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knutzon; Deborah	Granite Bay	CA		
Mukerji; Pradip	Gahanna	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Thurmond; Jennifer	Columbus	OH		
Chaudhary; Sunita	Westerville	OH		

US-CL-CURRENT: 435/254.2; 435/189, 435/254.21, 435/320.1, 435/325, 435/410,  
536/23.1, 536/23.2, 536/23.7, 536/23.74, 536/24.32

ABSTRACT:

The present invention relates to fatty acid desaturases able to catalyze the conversion of oleic acid to linoleic acid, linoleic acid to gamma-linolenic acid, or of alpha-linolenic acid to stearidonic acid. Nucleic acid sequences encoding desaturases, nucleic acid sequences which hybridize thereto, DNA constructs comprising a desaturase gene, and recombinant host microorganism or animal expressing increased levels of a desaturase are described. Methods for desaturating a fatty acid and for producing a desaturated fatty acid by expressing increased levels of a desaturase are disclosed. Fatty acids, and oils containing them, which have been desaturated by a desaturase produced by recombinant host microorganisms or animals are provided. Pharmaceutical compositions, infant formulas or dietary supplements containing fatty acids which have been desaturated by a desaturase produced by a recombinant host microorganism or animal also are described.

30 Claims, 18 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 16

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RWMC	Draw. De
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☐ 24. Document ID: US 5762935 A

L1: Entry 24 of 40

File: USPT

Jun 9, 1998

US-PAT-NO: 5762935

DOCUMENT-IDENTIFIER: US 5762935 A

TITLE: Anti-inflammatory and infection protective effects of sesamin-based lignans

DATE-ISSUED: June 9, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Forse; R. Armour	Brookline	MA		
Chavali; Sambasiva	Boston	MA		

US-CL-CURRENT: 424/776; 424/725, 514/469, 514/783, 514/885

ABSTRACT:

The uses of lignans of the sesamin family to treat infection and inflammation is disclosed. These lignans may be delivered enterally or parenterally and either in the form of sesame oil or in purified form. A total parenteral nutrition solution or dietary supplement are the preferred forms of administration.

13 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RWMC	Draw. De
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☐ 25. Document ID: US 5674853 A

L1: Entry 25 of 40

File: USPT

Oct 7, 1997

US-PAT-NO: 5674853

DOCUMENT-IDENTIFIER: US 5674853 A

TITLE: Enteral formulations for treatment of inflammation and infection

DATE-ISSUED: October 7, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Forse; R. Armour	Brookline	MA		
Chavali; Sambasiva	Boston	MA		

US-CL-CURRENT: 514/25, 424/755, 424/764, 424/765, 424/776, 424/DIG.13, 514/464,  
514/468, 514/783, 514/825, 514/886, 514/887, 514/904, 514/905

## ABSTRACT:

The present invention features saponin containing enteral formulations for treatment of infection and inflammation. These saponin containing formulations are particularly useful in conjunction with oils rich in .omega.3 polyunsaturated fatty acids such as fish oils and flax oil but also show benefits with .omega.6 rich oils such as borage oil, black currant seed oil, canola oil and rapeseed oil. These formulations may also contain a lignan from the sesamin family.

16 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw De
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☐ 26. Document ID: US 5658767 A

L1: Entry 26 of 40

File: USPT

Aug 19, 1997

US-PAT-NO: 5658767

DOCUMENT-IDENTIFIER: US 5658767 A

TITLE: Arachidonic acid and methods for the production and use thereof

DATE-ISSUED: August 19, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kyle; David J.	Catonsville	MD		

US-CL-CURRENT: 435/134, 426/585, 514/558, 514/560

## ABSTRACT:

The present invention relates to processes for the production of arachidonic acid containing oils, which preferably are substantially free of eicosapentanoic acid.

The invention also relates to compositions containing such oils, in an unmodified form, and to uses of such oils. In a preferred embodiment, *Pythium insidiosum* is cultivated, harvested and the oil is extracted, recovered, and used as an additive for infant formula. In an alternative embodiment, *Mortierella alpina* is cultivated, harvested and the oil is extracted, recovered, and used as an additive for infant formula.

52 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 27. Document ID: US 5550156 A

L1: Entry 27 of 40

File: USPT

Aug 27, 1996

US-PAT-NO: 5550156

DOCUMENT-IDENTIFIER: US 5550156 A

TITLE: Microbial oil mixtures and uses thereof

DATE-ISSUED: August 27, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kyle; David J.	Catonsville	MD		

US-CL-CURRENT: 514/547; 514/560

ABSTRACT:

The present invention relates to compositions including blends of microbial oils, methods of using such compositions, particularly as supplements for infant formula, and methods of increasing the amount of long chain polyunsaturated fatty acids in infant formula.

31 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 28. Document ID: US 5397778 A

L1: Entry 28 of 40

File: USPT

Mar 14, 1995

US-PAT-NO: 5397778

DOCUMENT-IDENTIFIER: US 5397778 A

TITLE: Enteral formulations for treatment of inflammation and infection

DATE-ISSUED: March 14, 1995

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Forse; R. Armour	Brookline	MA		
Chavali; Sambasiva	Boston	MA		

US-CL-CURRENT: [514/198](#); [424/755](#), [424/764](#), [424/765](#), [424/776](#), [424/DIG.13](#), [426/804](#), [426/810](#), [514/464](#), [514/468](#), [514/783](#), [514/825](#), [514/886](#), [514/887](#), [514/904](#), [514/905](#)

## ABSTRACT:

The present invention features saponin containing enteral formulations for treatment of infection and inflammation. These saponin containing formulations are particularly useful in conjunction with oils rich in .omega.3 polyunsaturated fatty acids such as fish oils and flax oil but also show benefits with .omega.6 rich oils such as borage oil, black currant seed oil, canola oil and rapeseed oil. These formulations may also contain a lignan from the sesamin family.

16 Claims; 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstracts	Attachments	Claims	KWIC	Draw. De
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☐ 29. Document ID: US 5376541 A

L1: Entry 29 of 40

File: USPT

Dec 27, 1994

US-PAT-NO: 5376541

DOCUMENT-IDENTIFIER: US 5376541 A

TITLE: Process for production of 8,11-eicosadienoic acid using Mortierella alpina

DATE-ISSUED: December 27, 1994

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kawashima; Hiroshi	Ibaraki			JP
Akimoto; Kengo	Ibaraki			JP
Yamada; Hideaki	Kyoto			JP
Shimizu; Sakayu	Kyoto			JP

US-CL-CURRENT: [435/136](#); [435/134](#), [435/135](#), [435/244](#), [435/255.1](#)

## ABSTRACT:

A process for the production of 8,11-eicosadienoic acid or a lipid containing 8,11-eicosadienoic acid comprising the steps of, culturing a microorganism having an ability to produce an omega 9 type polyunsaturated fatty acid in a medium supplemented with a .DELTA.5 desaturase inhibitor, or adding a .DELTA.5 desaturase inhibitor to a medium in which said microorganism has been cultured and further culturing the microorganism to produce 8,11-eicosadienoic acid, or a lipid

containing 8,11-eicosadienoic acid, and recovering the 8,11-eicosadienoic acid, or the lipid containing 8,11-eicosadienoic acid.

4 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw. De
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☐ 30. Document ID: US 5374657 A

L1: Entry 30 of 40

File: USPT

Dec 20, 1994

US-PAT-NO: 5374657

DOCUMENT-IDENTIFIER: US 5374657 A

TITLE: Microbial oil mixtures and uses thereof

DATE-ISSUED: December 20, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kyle; David J.	Catonsville	MD		

US-CL-CURRENT: 514/547; 514/560

ABSTRACT:

The present invention relates to compositions including blends of microbial oils, methods of using such compositions, particularly as supplements for infant formula, and methods of increasing the amount of long chain polyunsaturated fatty acids in infant formula.

22 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw. De
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☐ 31. Document ID: US 5324662 A

L1: Entry 31 of 40

File: USPT

Jun 28, 1994

US-PAT-NO: 5324662

DOCUMENT-IDENTIFIER: US 5324662 A

TITLE: Stereoselective microbial or enzymatic reduction of 3,5-dioxo esters to 3-hydroxy-5-oxo, 3-oxo-5-hydroxy, and 3,5-dihydroxy esters

DATE-ISSUED: June 28, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Patel; Ramesh N.	Bridgewater	NJ		
McNamee; Clyde G.	Lawrenceville	NJ		
Banerjee; Amit	Newtown	PA		
Szarka; Laszlo J.	East Brunswick	NJ		

US-CL-CURRENT: [435/280](#); [435/121](#), [435/135](#), [435/822](#), [435/872](#), [435/938](#)

## ABSTRACT:

Microorganisms or reductases derived therefrom reduce a diketo ester ##STR1## to form the associated 3-hydroxy, 5-hydroxy, or 3,5-dihydroxy esters. Selected microorganisms produce the preferred stereoisomers ##STR2## which can be used to prepare antihypercholesterolemic agents such as ##STR3##

8 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 32. Document ID: US 5322780 A

L1: Entry 32 of 40

File: USPT

Jun 21, 1994

US-PAT-NO: 5322780

DOCUMENT-IDENTIFIER: US 5322780 A

TITLE: Process for production of omega 9 type polyunsaturated fatty acid

DATE-ISSUED: June 21, 1994

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kawashima; Hiroshi	Ibaraki			JP
Yamada; Hideaki	Kyoto			JP
Shimizu; Sakayu	Kyoto			JP

US-CL-CURRENT: [435/134](#); [435/171](#), [435/254.1](#), [435/911](#)

## ABSTRACT:

A process for production of omega 9 type polyunsaturated fatty acid or a lipid containing the fatty acid, comprising the steps of culturing a microorganism having an ability to produce omega 9 type polyunsaturated fatty acid or a lipid containing said fatty acid, and recovering the omega 9 type polyunsaturated fatty acid or the lipid containing said fatty acid.

12 Claims, 0 Drawing figures  
Exemplary Claim Number: 1



Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw D
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☐ 33. Document ID: US 5093249 A

L1: Entry 33 of 40

File: USPT

Mar 3, 1992

US-PAT-NO: 5093249

DOCUMENT-IDENTIFIER: US 5093249 A

TITLE: Process for production of dihomogamma-linolenic acid and inhibitor for unsaturation reaction at DELTA.5-position of fatty acid

DATE-ISSUED: March 3, 1992

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nakajima; Toshiaki	Ciba			JP
Shimauchi; Toshitsugu	Ciba			JP

US-CL-CURRENT: 435/135; 435/134

## ABSTRACT:

Dihomogamma-linolenic acid is produced by cultivating a microorganism having an ability to produce dihomogamma-linolenic acid on a culture medium containing a compound having an ability to inhibit an unsaturation reaction at a DELTA.5-position of fatty acid.

9 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw D
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☐ 34. Document ID: US 4900348 A

L1: Entry 34 of 40

File: USPT

Feb 13, 1990

US-PAT-NO: 4900348

DOCUMENT-IDENTIFIER: US 4900348 A

TITLE: Production of disease suppressive compost and container media, and microorganism culture for use therein

DATE-ISSUED: February 13, 1990

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hoitink; Harry A.	Wooster	OH		

US-CL-CURRENT: 71/6; 435/252.1, 435/252.4, 435/253.3, 435/256.7, 435/42, 435/850,

435/879, 435/945, 71/12, 71/23, 71/24 , 71/9

## ABSTRACT:

Compost, e.g. hardwood bark, is rendered suppressive to plant pathogens, such as *Rhizoctonia solani*, *Pythium ultimum* and *Fusarium*, and/or diseases caused thereby by adding to the compost, desirably after peak heating has been achieved but before substantial recolonization of the compost by mesophilic microorganisms has occurred, one or more microorganisms antagonistic to the plant pathogen. Container media also is rendered suppressive to plant pathogens and/or diseases caused thereby by amending the media with the just-described prepared suppressive compost or, alternatively, by amending separately with the compost and with *Trichoderma* fungus and antagonistic bacterium separately or mixed together. Desirably, the inoculated antagonistic microorganisms comprise *Trichoderma hamatum* species A.T.C.C. No. 20765 or 20764, together with *Xanthomonas maltophilia* bacterium species A.T.C.C. No. 53199 or a *Flavobacterium balustinum* isolate 299, A.T.C.C. No. 53198 species, A.T.C.C. No. 53198.

16 Claims, 1 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMK	Draw De
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☐ 35. Document ID: US 4642131 A

L1: Entry 35 of 40

File: USPT

Feb 10, 1987

US-PAT-NO: 4642131

DOCUMENT-IDENTIFIER: US 4642131 A

TITLE: Production of disease suppressive compost and microorganism culture for use therein

DATE-ISSUED: February 10, 1987

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hoitink; Harry A. J.	Wooster	OH		

US-CL-CURRENT: 71/6; 424/93.3, 435/252.1, 435/252.4, 435/253.3, 435/254.7, 435/850, 435/874, 435/945, 71/12, 71/23, 71/24, 71/9

## ABSTRACT:

Compost is rendered suppressive to plant pathogens, such as *Rhizoctonia solani*, *Pythium ultimum* and *Fusarium*, and/or diseases caused thereby by adding to the compost, desirably after peak heating has been achieved but before substantial recolonization of the compost by mesophilic microorganisms has occurred, one or more microorganisms antagonistic to the plant pathogen. Desirably the inoculated antagonistic microorganisms comprise *Trichoderma hamatum* species A.T.C.C. No. 20765 or 20764, together with a *Pseudomonas maltophilia* bacterium species A.T.C.C. No. 53199 or a *Flavobacterium* species, A.T.C.C. No. 53198.

18 Claims, 6 Drawing figures  
Exemplary Claim Number: 1,13  
Number of Drawing Sheets: 6

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Draw. De
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☐ 36. Document ID: JP 09121873 A

L1: Entry 36 of 40

File: JPAB

May 13, 1997

PUB-NO: JP409121873A  
DOCUMENT-IDENTIFIER: JP 09121873 A  
TITLE: CYTOCHROME B5 GENE

PUBN-DATE: May 13, 1997

INVENTOR-INFORMATION:

NAME

COUNTRY

SHIMIZU, AKIRA

KOBAYASHI, TATSUHIKO

INT-CL (IPC): C12 N 15/09; C07 H 21/04; C12 N 1/21; C12 P 21/02

ABSTRACT:

PROBLEM TO BE SOLVED: To obtain a new gene coding cytochrome b5 having a specific amino acid sequence and originated from Mortierella alpina, and useful for producing an enzyme capable of efficiently producing a human essential fatty acid, etc., by being combined with desaturase.

SOLUTION: A new DNA sequence codes the polypeptide of cytochrome b5 originated from Mortierella alpina and having an amino acid sequence of the formula, or a modified polypeptide holding the activity of the cytochrome b5 and having the amino acid sequence of the formula wherein one or more amino acids are defected or substituted or to which one or more other amino acids are added. The DNA sequence is useful for producing the cytochrome b5 which can reconstitute an electron transfer system in vitro and efficiently produce a human essential fatty acid, etc. The gene is obtained by extracting genome DNA from Mortierella alpina 1S-4 by a conventional method, and screening the obtained library with a probe.

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Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Draw. De
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☐ 37. Document ID: AU 2003206422 A1, WO 9933958 A2, ZA 9811821 A, AU 9917748 A, EP 1042485 A2, CN 1283230 A, HU 200101153 A2, KR 2001033517 A, BR 9814434 A, JP 2002508932 W, MX 2000006158 A1, US 20030152983 A1

L1: Entry 37 of 40

File: DWPI

Jul 24, 2003

DERWENT-ACC-NO: 1999-444067

DERWENT-WEEK: 200464

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TITLE: New isolated delta5-fatty acid desaturase enzymes useful in gene therapy

INVENTOR: MICHAELSON, L; NAPIER, J A ; STOBART, K

PRIORITY-DATA: 1998GB-0014034 (June 29, 1998), 1997GB-0027256 (December 23, 1997),  
2003AU-0206422 (July 1, 2003)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>AU 2003206422 A1</u>	July 24, 2003		000	C12N009/00
<u>WO 9933958 A2</u>	July 8, 1999	E	035	C12N009/00
<u>ZA 9811821 A</u>	September 29, 1999		036	C12N000/00
<u>AU 9917748 A</u>	July 19, 1999		000	C12N009/00
<u>EP 1042485 A2</u>	October 11, 2000	E	000	C12N015/53
<u>CN 1283230 A</u>	February 7, 2001		000	C12N015/53
<u>HU 200101153 A2</u>	August 28, 2001		000	C12N009/00
<u>KR 2001033517 A</u>	April 25, 2001		000	C12N009/00
<u>BR 9814434 A</u>	October 23, 2001		000	C12N009/00
<u>JP 2002508932 W</u>	March 26, 2002		085	C12N015/09
<u>MX 2000006158 A1</u>	October 1, 2001		000	C12N009/00
<u>US 20030152983 A1</u>	August 14, 2003		000	C12Q001/68

INT-CL (IPC): A01 H 1/00; A01 H 5/00; A01 K 67/027; A23 L 1/00; A61 B 0/00; A61 K 31/20; A61 K 31/202; C07 H 21/04; C12 N 0/00; C12 N 1/15; C12 N 1/18; C12 N 1/19; C12 N 1/21; C12 N 5/10; C12 N 9/00; C12 N 9/02; C12 N 9/04 ; C12 N 15/09; C12 N 15/11; C12 N 15/53; C12 N 15/81; C12 N 15/82; C12 P 7/64; C12 Q 1/68

ABSTRACTED-PUB-NO: WO 9933958A

## BASIC-ABSTRACT:

NOVELTY - New isolated Delta 5-fatty acid desaturase DNA (A) is obtained from Mortierella alpina and Caenorhabditis elegans.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- (1) isolated Caenorhabditis elegans Delta 5-fatty acid desaturase;
- (2) a polypeptide encoded by a DNA sequence as in (A);
- (3) a DNA sequence obtained by modification of a functional natural gene encoding a Delta 5-fatty acid desaturase as in (1);
- (4) a vector containing a DNA sequence or any portion of a DNA sequence as in (A);
- (5) an organism engineered to produce high levels of a polypeptide as in (2);
- (6) a method of producing polyunsaturated fatty acids by contacting a suitable substrate with a Delta 5-fatty acid desaturase as in (1) or a polypeptide as in (2);
- (7) a method of converting dihomogamma linolenic acid to arachidonic acid where the conversion is catalyzed by a Delta 5-fatty acid desaturase as in (1) or a

polypeptide as in (2);

(8) an organism engineered to produce high levels of a product of a reaction catalyzed by a Delta 5-fatty acid desaturase as in (1) or by a polypeptide as in (2);

(9) an organism engineered to carry out the method of (6) or (7);

(10) a seed or other reproductive material derived from an organism as in (8) or (9);

(11) an isolated multienzyme pathway which includes a Delta 5-desaturase as in (1) or a polypeptide as in (2);

(12) a compound produced by a conversion of a substrate, where the conversion is catalyzed by a Delta 5-desaturase as in (1) or by a polypeptide as in (2);

(13) an intermediate compound produced by a reaction catalyzed by a Delta 5-desaturase as in (1) or by a polypeptide as in (2);

(14) a foodstuff or dietary supplement containing a polyunsaturated fatty acid produced by the method of (6) or (7);

(15) prostaglandins synthesized by a biosynthetic pathway including a catalytic activity of a Delta 5- desaturase as in (1) or by a polypeptide as in (2);

(16) a method for modulation of prostaglandin synthesis by the control of the levels of expression of a DNA sequence as in (A);

(17) a probe comprising all or part of a DNA sequence as in (2) or (3) or an equivalent RNA sequence;

(18) a diagnostic or search probe comprising all or part of a Delta 5-desaturase as in (1) or a polypeptide as in (2); and

(19) a method of isolating Delta 5-desaturase using the probe of (16).

ACTIVITY - Antilipemic.

MECHANISM OF ACTION - The Delta 5-fatty acid desaturases catalyze the production of polyunsaturated fatty acids by converting dihomogamma linolenic acid to arachidonic acid.

USE - The Delta 5-fatty acid desaturases catalyze the production of polyunsaturated fatty acids, e.g. the conversion of dihomogamma linolenic acid to arachidonic acid (claimed). The genes can be used in gene therapy as a preventative treatment, e.g. in patients suffering from high levels of cholesterol or other conditions where administration of polyunsaturated fatty acids may have beneficial disease-preventative effects. The polyunsaturated fatty acids can be used in foodstuffs or dietary supplements. The Delta 5-fatty acid desaturases can also be used for the synthesis of prostaglandins or modulation of the synthesis. The products can also be used for detection and diagnosis.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D.
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☐ 38. Document ID: WO 9846764 A1, AU 9871147 A, NO 9904926 A, EP 996732 A1, US 6051754 A, CZ 9903584 A3, AU 720677 B, BR 9808506 A, US 6075183 A, SK 9901399 A3, CN

1253588 A, NZ 337459 A, HU 200001517 A2, MX 9909328 A1, KR 2001006258 A, JP  
2001527395 W

L1: Entry 38 of 40

File: DWPI

Oct 22, 1998

DERWENT-ACC-NO: 1999-080739

DERWENT-WEEK: 200280

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TITLE: Nucleic acid construct able to express fatty acid desaturase in plants -  
useful in human or animal nutrition, as cosmetics and therapeutically, e.g. for  
restenosis, cancer and diabetes

INVENTOR: CHAUDHARY, S; HUANG, Y ; KNUTZON, D ; LEONARD, A E ; MUKERJI, P ;  
THURMOND, J

PRIORITY-DATA: 1997US-0956985 (October 24, 1997), 1997US-0833610 (April 11, 1997),  
1997US-0834033 (April 11, 1997), 1997US-0834655 (April 11, 1997)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>WO 9846764 A1</u>	October 22, 1998	E	209	C12N015/53
<u>AU 9871147 A</u>	November 11, 1998		000	
<u>NO 9904926 A</u>	November 30, 1999		000	C12N000/00
<u>EP 996732 A1</u>	May 3, 2000	E	000	C12N015/53
<u>US 6051754 A</u>	April 18, 2000		000	C12N015/82
<u>CZ 9903584 A3</u>	May 17, 2000		000	C12N015/53
<u>AU 720677 B</u>	June 8, 2000		000	C12N015/53
<u>BR 9808506 A</u>	May 23, 2000		000	C12N015/53
<u>US 6075183 A</u>	June 13, 2000		000	A01H005/00
<u>SK 9901399 A3</u>	May 16, 2000		000	C12N015/53
<u>CN 1253588 A</u>	May 17, 2000		000	C12N015/53
<u>NZ 337459 A</u>	July 28, 2000		000	A61K031/20
<u>HU 200001517 A2</u>	August 28, 2000		000	C12N015/53
<u>MX 9909328 A1</u>	September 1, 2000		000	C12N015/53
<u>KR 2001006258 A</u>	January 26, 2001		000	C12N015/82
<u>JP 2001527395 W</u>	December 25, 2001		229	C12N015/09

W INT-CL (IPC): A01 H 5/00; A23 D 9/007; A23 K 1/00; A23 K 1/16; A23 L 1/30; A61 K 31/20; A61 K 38/00; A61 P 3/02; C07 H 21/04; C11 B 1/00; C11 C 3/00; C12 N 0/00; C12 N 1/21; C12 N 5/04; C12 N 5/10; C12 N 15/09; C12 N 15/53; C12 N 15/82; C12 P 7/64; C12 N 15/09; C12 R 1:645

ABSTRACTED-PUB-NO: US 6051754A

BASIC-ABSTRACT:

Nucleic acid construct contains: (a) at least one of 1617 (S1), 1488 (S2) and 1488 (S3) bp sequences (I), or (b) any sequence encoding the same proteins as (I), coupled to a heterologous sequence, particularly an expression control sequence functional in plants. Also new are: (A) recombinant plant cells containing at least one DNA encoding a Mortierella alpina fatty acid desaturase (FAD), so that it can produce a polyunsaturated fatty acid (PUFA); (B) oils produced by these cells (or plants containing them), and (C) 7 sequences encoding human FAD and two sequences encoding Schizochytrium FAD, when expressed in plant cells.

USE - Cells of (A) produce linoleic acid (LA), arachidonic acid (ARA), gamma - linolenic acid (GLA), dihomo- gamma -linolenic acid (DGLA), stearidonic acid (SDA) and eicosapentaenoic acid (EPA). The resulting plant oils are used: (i) to treat or prevent malnutrition; (ii) in infant feeding formulas, or dietary supplements or substitutes, for use in humans or animals; (iii) for treating disorders associated with inadequate consumption or production of PUFA (or their meabolites such as prostaglandins), e.g. restenosis after angioplasty, inflammation, rheumatoid arthritis, psoriasis, osteoporosis, cancer (including rendering cells more susceptible to chemotherapy), eczema, AIDS, diabetes; (iv) as cosmetics, and (v) as animal feeds. Fragments of (I) are used as probes to isolate related coding sequences.

ADVANTAGE - Recombinant plants can produce high yields of PUFA, since new pathways can be created and unwanted ones suppressed. Plants can be engineered to express oils of particular PUFA composition, e.g. one similar to that in human milk, and product recovery is simpler than with e.g. fish.

ABSTRACTED-PUB-NO:

US 6075183A EQUIVALENT-ABSTRACTS:

Nucleic acid construct contains: (a) at least one of 1617 (S1), 1488 (S2) and 1488 (S3) bp sequences (I), or (b) any sequence encoding the same proteins as (I), coupled to a heterologous sequence, particularly an expression control sequence functional in plants. Also new are: (A) recombinant plant cells containing at least one DNA encoding a Mortierella alpina fatty acid desaturase (FAD), so that it can produce a polyunsaturated fatty acid (PUFA); (B) oils produced by these cells (or plants containing them), and (C) 7 sequences encoding human FAD and two sequences encoding Schizochytrium FAD, when expressed in plant cells.

USE - Cells of (A) produce linoleic acid (LA), arachidonic acid (ARA), gamma - linolenic acid (GLA), dihomo- gamma -linolenic acid (DGLA), stearidonic acid (SDA) and eicosapentaenoic acid (EPA). The resulting plant oils are used: (i) to treat or prevent malnutrition; (ii) in infant feeding formulas, or dietary supplements or substitutes, for use in humans or animals; (iii) for treating disorders associated with inadequate consumption or production of PUFA (or their meabolites such as prostaglandins), e.g. restenosis after angioplasty, inflammation, rheumatoid arthritis, psoriasis, osteoporosis, cancer (including rendering cells more susceptible to chemotherapy), eczema, AIDS, diabetes; (iv) as cosmetics, and (v) as animal feeds. Fragments of (I) are used as probes to isolate related coding sequences.

ADVANTAGE - Recombinant plants can produce high yields of PUFA, since new pathways can be created and unwanted ones suppressed. Plants can be engineered to express oils of particular PUFA composition, e.g. one similar to that in human milk, and product recovery is simpler than with e.g. fish.

Nucleic acid construct contains: (a) at least one of 1617 (S1), 1488 (S2) and 1488 (S3) bp sequences (I), or (b) any sequence encoding the same proteins as (I), coupled to a heterologous sequence, particularly an expression control sequence functional in plants. Also new are: (A) recombinant plant cells containing at least one DNA encoding a Mortierella alpina fatty acid desaturase (FAD), so that it can produce a polyunsaturated fatty acid (PUFA); (B) oils produced by these cells (or plants containing them), and (C) 7 sequences encoding human FAD and two sequences encoding Schizochytrium FAD, when expressed in plant cells.

USE - Cells of (A) produce linoleic acid (LA), arachidonic acid (ARA), gamma - linolenic acid (GLA), dihomo- gamma -linolenic acid (DGLA), stearidonic acid (SDA) and eicosapentaenoic acid (EPA). The resulting plant oils are used: (i) to treat or prevent malnutrition; (ii) in infant feeding formulas, or dietary supplements or

substitutes, for use in humans or animals; (iii) for treating disorders associated with inadequate consumption or production of PUFA (or their meabolites such as prostaglandins), e.g. restenosis after angioplasty, inflammation, rheumatoid arthritis, psoriasis, osteoporosis, cancer (including rendering cells more susceptible to chemotherapy), eczema, AIDS, diabetes; (iv) as cosmetics, and (v) as animal feeds. Fragments of (I) are used as probes to isolate related coding sequences.

ADVANTAGE - Recombinant plants can produce high yields of PUFA, since new pathways can be created and unwanted ones suppressed. Plants can be engineered to express oils of particular PUFA composition, e.g. one similar to that in human milk, and product recovery is simpler than with e.g. fish.

WO 9846764A

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. Data
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☐ 39. Document ID: MX 212281 B, WO 9846763 A1, AU 9869616 A, US 5968809 A, NO 9904925 A, EP 975766 A1, EP 996732 A1, CZ 9903583 A3, BR 9808507 A, CN 1252099 A, SK 9901398 A3, CN 1253588 A, NZ 337457 A, NZ 337459 A, HU 200001236 A2, US 6136574 A, AU 726807 B, MX 9909328 A1, MX 9909329 A1, KR 2001006257 A, KR 2001006258 A, JP 2001523091 W, US 6410288 B1

L1: Entry 39 of 40

File: DWPI

Dec 18, 2002

DERWENT-ACC-NO: 1998-594582

DERWENT-WEEK: 200413

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TITLE: New isolated fatty acid desaturase enzymes - used for the production of polyunsaturated fatty acids for use in, e.g. pharmaceutical compositions, nutritional compositions, cosmetics or animal feed

INVENTOR: CHAUDHARY, S; HUANG, Y ; KNUTZON, D ; LEONARD, A E ; MUKERJI, P ; THURMOND, J

PRIORITY-DATA: 1997US-0834655 (April 11, 1997), 1997US-0833610 (April 11, 1997), 1997US-0834033 (April 11, 1997), 1997US-0956985 (October 24, 1997), 1999US-0363574 (July 29, 1999), 1998WO-US07421 (April 10, 1998), 1999US-0363526 (July 29, 1999)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>MX 212281 B</u>	December 18, 2002		000	A23L001/30
<u>WO 9846763 A1</u>	October 22, 1998	E	165	C12N015/53
<u>AU 9869616 A</u>	November 11, 1998		000	
<u>US 5968809 A</u>	October 19, 1999		000	C12N001/16
<u>NO 9904925 A</u>	November 30, 1999		000	C12N000/00
<u>EP 975766 A1</u>	February 2, 2000	E	000	
<u>EP 996732 A1</u>	May 3, 2000	E	000	
<u>CZ 9903583 A3</u>	May 17, 2000		000	
<u>BR 9808507 A</u>	May 23, 2000		000	C12N015/53
<u>CN 1252099 A</u>	May 3, 2000		000	
<u>SK 9901398 A3</u>	May 16, 2000		000	



CN 1253588 A	May 17, 2000	000	
NZ 337457 A	July 28, 2000	000	A61K031/20
NZ 337459 A	July 28, 2000	000	A61K031/20
HU 200001236 A2	July 28, 2000	000	
US 6136574 A	October 24, 2000	000	C12P007/64
AU 726807 B	November 23, 2000	000	
MX 9909328 A1	September 1, 2000	000	C12N015/53
MX 9909329 A1	September 1, 2000	000	C12N015/53
KR 2001006257 A	January 26, 2001	000	C12N015/53
KR 2001006258 A	January 26, 2001	000	C12N015/82
JP 2001523091 W	November 20, 2001	174	C12N015/09
US 6410288 B1	June 25, 2002	000	C12N009/02

726807 B INT-CL (IPC): A23 K 1/00; A23 K 1/16; A23 L 1/28; A23 L 1/30; A61 K 7/00; A61 K 31/20; A61 K 31/202; A61 K 31/232; A61 K 38/00; A61 P 17/00; C07 H 21/04; C11 B 1/00; C12 N 0/00; C12 N 1/16; C12 N 1/19; C12 N 5/10; C12 N 9/02; C12 N 15/09; C12 N 15/53; C12 N 15/81; C12 N 15/82; C12 P 7/64

ABSTRACTED-PUB-NO: US 5968809A

BASIC-ABSTRACT:

An isolated nucleic acid having a 1617 or 1488 base pair sequence ((S1) and (S2) encoding a polypeptide of 457 or 399 amino acids ((S3) and (S4)) respectively, is new. Also claimed: (1) an isolated nucleic acid comprising a nucleotide sequence (NS) which encodes a polypeptide which desaturates a fatty acid molecule at carbon 6 or 12 from the carboxyl end of the polypeptide, where the NS has an average A/T content of < 60%; (2) a nucleic acid comprising a fungal NS which is identical to a sequence of at least 50 nucleotides in (S1) or (S2) or is complementary to this sequence; (3) an isolated nucleic acid having a NS with at least 50% homology to (S1) or (S2); (4) a nucleic acid construct comprising a NS having (S1) or (S2) operably associated with an expression control sequence functional in a microbial cell; (5) a nucleic acid construct comprising a NS having an A/T content of < 60% encoding a functionally active Delta 6-desaturase having an amino acid sequence which corresponds to or is complementary to all of or a portion of an amino acid sequence (S2), or (S4) where the NS is operably associated with a transcription control sequence functional in a yeast cell; (6) a recombinant yeast cell comprising a nucleic acid construct as in (5); (7) a recombinant yeast cell comprising at least 1 copy of a vector comprising a fungal NS which encodes a polypeptide which converts 18:2 fatty acids to 18:3 fatty acids or 18:3 fatty acids to 18:4 fatty acids, where the yeast cell or an ancestor of the yeast cell was transformed with the vector to produce the recombinant yeast cell, and where the NS is operably associated with an expression control sequence functional in the recombinant yeast cell; (8) an isolated or purified polypeptide which desaturates a fatty acid molecule at carbon 12 or carbon 6 or from the carboxyl end of the polypeptide, where the polypeptide is a fungal polypeptide or is derived from a fungal polypeptide; (9) an isolated nucleic acid encoding a polypeptide as in (8); (10) a host cell comprising a vector which includes a nucleic acid which encodes a fatty acid desaturase derived from *Mortierella alpina*, where the desaturase has an amino acid sequence (S3), and where the NS is operably linked to a promoter; (11) a recombinant yeast cell comprising at least 1 nucleic acid construct comprising a NS which encodes a functionally active Delta 6 desaturase having an amino acid sequence which corresponds to or is complementary to all or a portion of an amino acid sequence (S3), and at least 1 nucleic acid construct comprising a NS which encodes a functionally active Delta 12 desaturase having an amino acid sequence which corresponds to or is complementary to all or a portion of an amino acid sequence (S4), where the nucleic acid constructs are operably associated with

transcription control sequences functional in a yeast cell, and (12) a method for obtaining altered long chain polyunsaturated fatty acid (PUFA) biosynthesis comprising growing a plant having cells which contain at least 1 transgene, derived from a fungus or algae, which encode a transgene expression product which desaturates a fatty acid molecule at a carbon selected from carbon 6 and carbon 12 from the carboxyl end of the fatty acid molecule, where the at least 1 transgene is operably associated with an expression control sequence, where the at least 1 transgene is pressed, and long chain PUFA biosynthesis in the cells is altered; (13) an isolated peptide sequence selected from 11 amino acid sequences (all sequences are given in the specification).

USE - The products and methods can be used for desaturating fatty acids. The PUFA biosynthesis method can be used for obtaining microbial oils which can be used for treating or preventing malnutrition, in pharmaceutical compositions, in a nutritional formula, as a dietary supplement, in cosmetics or in animal feed (claimed). In particular, PUFAs can be used for treating e.g. restenosis after angioplasty, inflammation, rheumatoid arthritis, asthma, psoriasis, cancer, diabetes or eczema or reduce blood pressure. They can also be used to inhibit platelet aggregation, cause vasodilation, lower cholesterol levels, inhibit proliferation of vessel wall smooth muscle and fibrous tissue, reduce or prevent gastro-intestinal bleeding and other side effects caused by non-steroidal anti-inflammatory drugs, prevent or treat endometriosis and premenstrual syndrome, treat myalgic encephalomyelitis and chronic fatigue after viral infections, treat AIDS, multiple sclerosis, acute respiratory syndrome, hypertension and inflammatory skin disorders. The recombinant eukaryotic cells, e.g. yeast cells or their ancestors transformed with a vector comprising fungal DNA encoding a polypeptide which converts ALA to stearidonic acid (SA) or oleic acid to linoleic acid (LA), or LA to gamma -linolenic acid (GLA), may be used for production of SA, LA, or GLA in a eukaryotic cell culture (claimed).

ABSTRACTED-PUB-NO:

US 6136574A EQUIVALENT-ABSTRACTS:

An isolated nucleic acid having a 1617 or 1488 base pair sequence ((S1) and (S2) encoding a polypeptide of 457 or 399 amino acids ((S3) and (S4)) respectively, is new. Also claimed: (1) an isolated nucleic acid comprising a nucleotide sequence (NS) which encodes a polypeptide which desaturates a fatty acid molecule at carbon 6 or 12 from the carboxyl end of the polypeptide, where the NS has an average A/T content of < 60%; (2) a nucleic acid comprising a fungal NS which is identical to a sequence of at least 50 nucleotides in (S1) or (S2) or is complementary to this sequence; (3) an isolated nucleic acid having a NS with at least 50% homology to (S1) or (S2); (4) a nucleic acid construct comprising a NS having (S1) or (S2) operably associated with an expression control sequence functional in a microbial cell; (5) a nucleic acid construct comprising a NS having an A/T content of < 60% encoding a functionally active Delta 6-desaturase having an amino acid sequence which corresponds to or is complementary to all of or a portion of an amino acid sequence (S2), or (S4) where the NS is operably associated with a transcription control sequence functional in a yeast cell; (6) a recombinant yeast cell comprising a nucleic acid construct as in (5); (7) a recombinant yeast cell comprising at least 1 copy of a vector comprising a fungal NS which encodes a polypeptide which converts 18:2 fatty acids to 18:3 fatty acids or 18:3 fatty acids to 18:4 fatty acids, where the yeast cell or an ancestor of the yeast cell was transformed with the vector to produce the recombinant yeast cell, and where the NS is operably associated with an expression control sequence functional in the recombinant yeast cell; (8) an isolated or purified polypeptide which desaturates a fatty acid molecule at carbon 12 or carbon 6 or from the carboxyl end of the polypeptide, where the polypeptide is a fungal polypeptide or is derived from a fungal polypeptide; (9) an isolated nucleic acid encoding a polypeptide as in (8); (10) a host cell comprising a vector which includes a nucleic acid which encodes a fatty acid desaturase derived from Mortierella alpina, where the desaturase has an

amino acid sequence (S3), and where the NS is operably linked to a promoter; (11) a recombinant yeast cell comprising at least 1 nucleic acid construct comprising a NS which encodes a functionally active Delta 6 desaturase having an amino acid sequence which corresponds to or is complementary to all or a portion of an amino acid sequence (S3), and at least 1 nucleic acid construct comprising a NS which encodes a functionally active Delta 12 desaturase having an amino acid sequence which corresponds to or is complementary to all or a portion of an amino acid sequence (S4), where the nucleic acid constructs are operably associated with transcription control sequences functional in a yeast cell, and (12) a method for obtaining altered long chain polyunsaturated fatty acid (PUFA) biosynthesis comprising growing a plant having cells which contain at least 1 transgene, derived from a fungus or algae, which encode a transgene expression product which desaturates a fatty acid molecule at a carbon selected from carbon 6 and carbon 12 from the carboxyl end of the fatty acid molecule, where the at least 1 transgene is operably associated with an expression control sequence, where the at least 1 transgene is pressed, and long chain PUFA biosynthesis in the cells is altered; (13) an isolated peptide sequence selected from 11 amino acid sequences (all sequences are given in the specification).

USE - The products and methods can be used for desaturating fatty acids. The PUFA biosynthesis method can be used for obtaining microbial oils which can be used for treating or preventing malnutrition, in pharmaceutical compositions, in a nutritional formula, as a dietary supplement, in cosmetics or in animal feed (claimed). In particular, PUFAs can be used for treating e.g. restenosis after angioplasty, inflammation, rheumatoid arthritis, asthma, psoriasis, cancer, diabetes or eczema or reduce blood pressure. They can also be used to inhibit platelet aggregation, cause vasodilation, lower cholesterol levels, inhibit proliferation of vessel wall smooth muscle and fibrous tissue, reduce or prevent gastro-intestinal bleeding and other side effects caused by non-steroidal anti-inflammatory drugs, prevent or treat endometriosis and premenstrual syndrome, treat myalgic encephalomyelitis and chronic fatigue after viral infections, treat AIDS, multiple sclerosis, acute respiratory syndrome, hypertension and inflammatory skin disorders. The recombinant eukaryotic cells, e.g. yeast cells or their ancestors transformed with a vector comprising fungal DNA encoding a polypeptide which converts ALA to stearidonic acid (SA) or oleic acid to linoleic acid (LA), or LA to gamma -linolenic acid (GLA), may be used for production of SA, LA, or GLA in a eukaryotic cell culture (claimed).

An isolated nucleic acid having a 1617 or 1488 base pair sequence ((S1) and (S2) encoding a polypeptide of 457 or 399 amino acids ((S3) and (S4)) respectively, is new. Also claimed: (1) an isolated nucleic acid comprising a nucleotide sequence (NS) which encodes a polypeptide which desaturates a fatty acid molecule at carbon 6 or 12 from the carboxyl end of the polypeptide, where the NS has an average A/T content of < 60%; (2) a nucleic acid comprising a fungal NS which is identical to a sequence of at least 50 nucleotides in (S1) or (S2) or is complementary to this sequence; (3) an isolated nucleic acid having a NS with at least 50% homology to (S1) or (S2); (4) a nucleic acid construct comprising a NS having (S1) or (S2) operably associated with an expression control sequence functional in a microbial cell; (5) a nucleic acid construct comprising a NS having an A/T content of < 60% encoding a functionally active Delta 6-desaturase having an amino acid sequence which corresponds to or is complementary to all of or a portion of an amino acid sequence (S2), or (S4) where the NS is operably associated with a transcription control sequence functional in a yeast cell; (6) a recombinant yeast cell comprising a nucleic acid construct as in (5); (7) a recombinant yeast cell comprising at least 1 copy of a vector comprising a fungal NS which encodes a polypeptide which converts 18:2 fatty acids to 18:3 fatty acids or 18:3 fatty acids to 18:4 fatty acids, where the yeast cell or an ancestor of the yeast cell was transformed with the vector to produce the recombinant yeast cell, and where the NS is operably associated with an expression control sequence functional in the recombinant yeast cell; (8) an isolated or purified polypeptide which desaturates a

fatty acid molecule at carbon 12 or carbon 6 or from the carboxyl end of the polypeptide, where the polypeptide is a fungal polypeptide or is derived from a fungal polypeptide; (9) an isolated nucleic acid encoding a polypeptide as in (8); (10) a host cell comprising a vector which includes a nucleic acid which encodes a fatty acid desaturase derived from Mortierella alpina, where the desaturase has an amino acid sequence (S3), and where the NS is operably linked to a promoter; (11) a recombinant yeast cell comprising at least 1 nucleic acid construct comprising a NS which encodes a functionally active Delta 6 desaturase having an amino acid sequence which corresponds to or is complementary to all or a portion of an amino acid sequence (S3), and at least 1 nucleic acid construct comprising a NS which encodes a functionally active Delta 12 desaturase having an amino acid sequence which corresponds to or is complementary to all or a portion of an amino acid sequence (S4), where the nucleic acid constructs are operably associated with transcription control sequences functional in a yeast cell, and (12) a method for obtaining altered long chain polyunsaturated fatty acid (PUFA) biosynthesis comprising growing a plant having cells which contain at least 1 transgene, derived from a fungus or algae, which encode a transgene expression product which desaturates a fatty acid molecule at a carbon selected from carbon 6 and carbon 12 from the carboxyl end of the fatty acid molecule, where the at least 1 transgene is operably associated with an expression control sequence, where the at least 1 transgene is pressed, and long chain PUFA biosynthesis in the cells is altered; (13) an isolated peptide sequence selected from 11 amino acid sequences (all sequences are given in the specification).

USE - The products and methods can be used for desaturating fatty acids. The PUFA biosynthesis method can be used for obtaining microbial oils which can be used for treating or preventing malnutrition, in pharmaceutical compositions, in a nutritional formula, as a dietary supplement, in cosmetics or in animal feed (claimed). In particular, PUFAs can be used for treating e.g. restenosis after angioplasty, inflammation, rheumatoid arthritis, asthma, psoriasis, cancer, diabetes or eczema or reduce blood pressure. They can also be used to inhibit platelet aggregation, cause vasodilation, lower cholesterol levels, inhibit proliferation of vessel wall smooth muscle and fibrous tissue, reduce or prevent gastro-intestinal bleeding and other side effects caused by non-steroidal anti-inflammatory drugs, prevent or treat endometriosis and premenstrual syndrome, treat myalgic encephalomyelitis and chronic fatigue after viral infections, treat AIDS, multiple sclerosis, acute respiratory syndrome, hypertension and inflammatory skin disorders. The recombinant eukaryotic cells, e.g. yeast cells or their ancestors transformed with a vector comprising fungal DNA encoding a polypeptide which converts ALA to stearidonic acid (SA) or oleic acid to linoleic acid (LA), or LA to gamma -linolenic acid (GLA), may be used for production of SA, LA, or GLA in a eukaryotic cell culture (claimed).

US 6410288B

An isolated nucleic acid having a 1617 or 1488 base pair sequence ((S1) and (S2) encoding a polypeptide of 457 or 399 amino acids ((S3) and (S4)) respectively, is new. Also claimed: (1) an isolated nucleic acid comprising a nucleotide sequence (NS) which encodes a polypeptide which desaturates a fatty acid molecule at carbon 6 or 12 from the carboxyl end of the polypeptide, where the NS has an average A/T content of < 60%; (2) a nucleic acid comprising a fungal NS which is identical to a sequence of at least 50 nucleotides in (S1) or (S2) or is complementary to this sequence; (3) an isolated nucleic acid having a NS with at least 50% homology to (S1) or (S2); (4) a nucleic acid construct comprising a NS having (S1) or (S2) operably associated with an expression control sequence functional in a microbial cell; (5) a nucleic acid construct comprising a NS having an A/T content of < 60% encoding a functionally active Delta 6-desaturase having an amino acid sequence which corresponds to or is complementary to all of or a portion of an amino acid sequence (S2), or (S4) where the NS is operably associated with a transcription control sequence functional in a yeast cell; (6) a recombinant yeast cell

comprising a nucleic acid construct as in (5); (7) a recombinant yeast cell comprising at least 1 copy of a vector comprising a fungal NS which encodes a polypeptide which converts 18:2 fatty acids to 18:3 fatty acids or 18:3 fatty acids to 18:4 fatty acids, where the yeast cell or an ancestor of the yeast cell was transformed with the vector to produce the recombinant yeast cell, and where the NS is operably associated with an expression control sequence functional in the recombinant yeast cell; (8) an isolated or purified polypeptide which desaturates a fatty acid molecule at carbon 12 or carbon 6 or from the carboxyl end of the polypeptide, where the polypeptide is a fungal polypeptide or is derived from a fungal polypeptide; (9) an isolated nucleic acid encoding a polypeptide as in (8); (10) a host cell comprising a vector which includes a nucleic acid which encodes a fatty acid desaturase derived from Mortierella alpina, where the desaturase has an amino acid sequence (S3), and where the NS is operably linked to a promoter; (11) a recombinant yeast cell comprising at least 1 nucleic acid construct comprising a NS which encodes a functionally active Delta 6 desaturase having an amino acid sequence which corresponds to or is complementary to all or a portion of an amino acid sequence (S3), and at least 1 nucleic acid construct comprising a NS which encodes a functionally active Delta 12 desaturase having an amino acid sequence which corresponds to or is complementary to all or a portion of an amino acid sequence (S4), where the nucleic acid constructs are operably associated with transcription control sequences functional in a yeast cell, and (12) a method for obtaining altered long chain polyunsaturated fatty acid (PUFA) biosynthesis comprising growing a plant having cells which contain at least 1 transgene, derived from a fungus or algae, which encode a transgene expression product which desaturates a fatty acid molecule at a carbon selected from carbon 6 and carbon 12 from the carboxyl end of the fatty acid molecule, where the at least 1 transgene is operably associated with an expression control sequence, where the at least 1 transgene is pressed, and long chain PUFA biosynthesis in the cells is altered; (13) an isolated peptide sequence selected from 11 amino acid sequences (all sequences are given in the specification).

USE - The products and methods can be used for desaturating fatty acids. The PUFA biosynthesis method can be used for obtaining microbial oils which can be used for treating or preventing malnutrition, in pharmaceutical compositions, in a nutritional formula, as a dietary supplement, in cosmetics or in animal feed (claimed). In particular, PUFAs can be used for treating e.g. restenosis after angioplasty, inflammation, rheumatoid arthritis, asthma, psoriasis, cancer, diabetes or eczema or reduce blood pressure. They can also be used to inhibit platelet aggregation, cause vasodilation, lower cholesterol levels, inhibit proliferation of vessel wall smooth muscle and fibrous tissue, reduce or prevent gastro-intestinal bleeding and other side effects caused by non-steroidal anti-inflammatory drugs, prevent or treat endometriosis and premenstrual syndrome, treat myalgic encephalomyelitis and chronic fatigue after viral infections, treat AIDS, multiple sclerosis, acute respiratory syndrome, hypertension and inflammatory skin disorders. The recombinant eukaryotic cells, e.g. yeast cells or their ancestors transformed with a vector comprising fungal DNA encoding a polypeptide which converts ALA to stearidonic acid (SA) or oleic acid to linoleic acid (LA), or LA to gamma -linolenic acid (GLA), may be used for production of SA, LA, or GLA in a eukaryotic cell culture (claimed).

WO 9846763A

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	KWIC	Draw. Data
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L1: Entry 40 of 40

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Apr 7, 1993

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DERWENT-WEEK: 199813  
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TITLE: Prodn. of 8,11-eicosa:di:enoic acid - by culturing microorganism able to produce an omega-9-type polyunsaturated fatty acid in medium contg. delta-5 desaturase inhibitor

INVENTOR: AKIMOTO, K; KAWASHIMA, H ; SHIMIZU, S ; YAMADA, H

PRIORITY-DATA: 1991JP-0251957 (September 30, 1991)

PATENT-FAMILY:

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EP 535941 A1	April 7, 1993	E	012	C12P007/64
ES 2110474 T3	February 16, 1998		000	C12P007/64
JP 05091886 A	April 16, 1993		013	C12P007/64
CA 2079366 A	March 31, 1993		000	C12P007/64
US 5376541 A	December 27, 1994		000	C12P007/40
EP 535941 B1	December 29, 1997	E	019	C12P007/64
DE 69223722 E	February 5, 1998		000	C12P007/64

INT-CL (IPC): C12P 7/40; C12P 7/62; C12P 7/64; C12P 7/64; C12R 1/645; C12P 7/64; C12R 1/785

ABSTRACTED-PUB-NO: EP 535941A

BASIC-ABSTRACT:

(A) Prodn. of 8,11-eicosadienoic acid (I) or a lipid contg. (I) comprises: culturing a microorganism having an ability to produce an omega 9 type polyunsatd. fatty acid in a medium supplemented with a delta-5 desaturase inhibitor, or adding a delta-5 desaturase inhibitor into a medium in which the microorganism has been cultured and further culturing the microorganism to produce (I) or a lipid contg. (I); and recovering (I) or the lipid contg. (I).

(B) Also claimed is the prodn. of (I) or a lipid contg. (I) comprising: culturing a microorganism having an ability to produce an omega 9 type polyunsatd. fatty acid in a medium supplemented, supplemented with at least one additive selected from sesame oil, peanut oil, an extract obtd. by extracting sesame oil with an organic solvent immiscible with sesame oil, an extract of sesame seeds, an extract of Gokahi derived from a medicinal plant, an extract of Acanthopanax gracilistylus W-W. Smith, or extract of Acanthopanax senticosus Harms, an extract of Acanthopanax henryi, an extract of Acanthopanax verticillatus HED, an extract of Touboku derived from a medicinal plant, an extract of Paulownia fortunei Hemsl, an extract of Paulownia tomentosa Steud, an extract of Hakukajuhi derived from a medicinal plant, an extract of Ginkgo biloba L, an extract of Hihatsu derived from a medicinal plant, an extract of Piper longum L, an extract of Saishin (Asiasari radix) derived from a medicinal plant, an extract of Asiasarum heterotropoides var mandshuricum, an extract of Asarum sieboldii miq, an extract of tarragon, an extract of dill seeds, an extract of parsley, an extract of turmeric, and an extract of nutmeg, or adding the additive into a medium in which the microorganism has been cultured and further culturing the microorganism to produce (I) or a lipid contg. (I); and recovering (I) or the lipid contg. (I).

ADVANTAGE - The process is simple and uses an inexpensive culture medium  
ABSTRACTED-PUB-NO:

## EP 535941B EQUIVALENT-ABSTRACTS:

(A) Prod'n. of 8,11-eicosadienoic acid (I) or a lipid contg. (I) comprises: culturing a microorganism having an ability to produce an omega 9 type polyunsatd. fatty acid in a medium supplemented with a delta-5 desaturase inhibitor, or adding a delta-5 desaturase inhibitor into a medium in which the microorganism has been cultured and further culturing the microorganism to produce (I) or a lipid contg. (I); and recovering (I) or the lipid contg. (I).

(B) Also claimed is the prodn. of (I) or a lipid contg. (I) comprising: culturing a microorganism having an ability to produce an omega 9 type polyunsatd. fatty acid in a medium supplemented, supplemented with at least one additive selected from sesame oil, peanut oil, an extract obtd. by extracting sesame oil with an organic solvent immiscible with sesame oil, an extract of sesame seeds, an extract of Gokahi derived from a medicinal plant, an extract of Acanthopanax gracilistylus W-W. Smith, or extract of Acanthopanax senticosus Harms, an extract of Acanthopanax henryi, an extract of Acanthopanax verticillatus HED, an extract of Touboku derived from a medicinal plant, an extract of Paulownia fortunei Hemsl, an extract of Paulownia tomentosa Steud, an extract of Hakukajuhi derived from a medicinal plant, an extract of Ginkgo biloba L, an extract of Hihatsu derived from a medicinal plant, an extract of Piper longum L, an extract of Saishin (Asiasari radix) derived from a medicinal plant, an extract of Asiasarum heterotropoides var mandshuricum, an extract of Asarum sieboldii miq, an extract of tarragon, an extract of dill seeds, an extract of parsley, an extract of turmeric, and an extract of nutmeg, or adding the additive into a medium in which the microorganism has been cultured and further culturing the microorganism to produce (I) or a lipid contg. (I); and recovering (I) or the lipid contg. (I).

ADVANTAGE - The process is simple and uses an inexpensive culture medium.

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8,11-Eicosadienoic acid is produced by (a) culturing Mortierella alpina SAM 1861 (FERM BP-3490) in a medium supplemented with a Delta5 desaturase inhibitor, or adding the inhibitor into a medium in which the microorganism has been cultured then further culturing to form prod., and (b) recovering it.

Delta5 desaturase inhibitor comprises a dioxabicyclo-(3.3.0) octane deriv. e.g. seasmin, seasminol, episesamin, episesaminol, sesamol etc.

USE - Used as precursor for leukotriene-3.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Allegations	Claims	KMC	Draw D
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Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
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Terms	Documents
(mortierella alpina or M. alpina) and (desaturase or oxidase or oxidoreductase)	40

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